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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,529	01/31/2002	Ronald A. Askeland	100201207-1	3681

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,529

Applicant(s)

ASKELAND ET AL.

Examiner

LAM S NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prakash et al. (US 6302507) in view of Nishikori et al. (US 5880751) and Saito (US 6068363).

Prakash et al. disclose a temperature control system for an inkjet printhead assembly, comprising:

a printhead assembly having ink ejection elements energizable by an electrical pulse having an amplitude and pulse width (column 14, line 36-38);

a sensor coupled to the printhead assembly for generating a signal representative of the printhead temperature (column 14, line 39-40);

a controller for reading a nominal operating pulse width, the signal from the sensor, said controller calculates an adjusted pulse width using the nominal operating pulse width, the signal from the sensor (column 14, line 41-46),

wherein the controller uses the adjusted pulse width to control printhead temperature (column 14, line 47-48).

Referring to claims 3, 13, 14: wherein the controller is located on at least one of the printhead or externally on a printer (claim 2).

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Referring to claims 4, 15: wherein the controller reads the nominal operating pulse width and the pulse width calibration data from a memory located on the printhead assembly (claim 4).

Referring to claims 5, 16: wherein the controller reads the nominal operating pulse width and the pulse width calibration data from a memory located on the printer (claim 5).

Referring to claims 6, 17: wherein the temperature sensor is analog temperature sensor (claim 6).

Referring to claims 7, 18: further including an analog to digital converter for generating a digital format of the measured analog signal (claim 7).

Referring to claims 8, 19: wherein the temperature sensor is a digital temperature sensor (claim 8).

Referring to claims 9, 20: wherein the temperature sensor includes multiple temperature sensors distributed around the printhead so as to provide global measurement of the printhead temperature (claim 9).

Referring to claims 10, 21: wherein the pulse width calibration data is in the form of an equation (claim 10).

Referring to claims 11, 22: wherein the pulse width calibration data is in a look-up table (claim 11).

Prakash et al. disclose the comprising of a memory for storing printhead operating parameters (column 5, line 30-37), a thermal response model of the printhead (FIG. 6: the memory stores a program that runs the process of FIG. 6), but fail to disclose that the memory

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stores an ejection history of the ejection elements that collectively define a dynamic estimate of the temperature distribution across the printhead.

Nishikori et al. disclose a memory for storing an ejection history (FIG. 4: in step S41, the history of the ejection state is stored and used to check if the current ejection state is changed or not; and column 11, line 14-22: the change of the ejection state contributes to the determination of the pulse width, thus the temperature of the printhead is controlled) of the ejection elements that collectively define a dynamic estimate of the temperature distribution across the printhead.

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the storing of ejection history that defines a dynamic estimate of the temperature of the printhead as disclosed by Nishikori et al. into the memory in the printing system disclosed by Prakash et al. The motivation of doing so is to provide an ink jet recording apparatus in which a stabilized ink ejection amount is maintained with a high quality of printing as taught by Nishikori et al. (column 7, line 43-46).

In addition, Prakash et al. do not disclose wherein the detected temperature is the temperature distributed across a predefined portion of the printhead assembly.

Saito disclose a recording head having multiple temperature sensors for detecting temperature distributed across a predefined portion of the printhead assembly (FIG. 1: temperature sensors 2 detect temperature distributed in a predefined portion corresponding to a substrate 14).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the detecting temperature disclosed by Prakash et al. such that the detected temperature is the temperature distributed across a predefined portion of the

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printhead assembly as disclosed by Saito. The motivation of doing so is to perform the temperature control at high precision in order to achieve higher image quality, to prevent density irregularities, and to improve the operation reliability of the printing system as taught by Saito (column 3, line 42-48).

Response to Arguments

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (703)308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

July 25, 2003



Stephen D. Meier
Primary Examiner